ELECTRICITY ON THE FARM *Magazine*

DECEMBER, 1955

Say "Merry Christmas" with Light
Trouble-Free Stock Watering . . .
A Feed Box That's Mechanized
Welding—An Expert Tells How . .
Controlled Poultry Environment

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XMAS GIFTS WITH A PERSONAL TOUCH

Story on Page 18

OUR 28th YEAR—THIS ISSUE 784,000 COPIES

GIVE the sensational NEW Sunbeam MIXMASTER

REG. U. S. PAT. OFF

with the exclusive BOWL-FIT BEATERS and Bowl-Speed Control

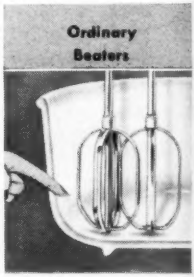
ONLY SUNBEAM MIXMASTER has all the marvelous features that give you higher, lighter cakes—creamier, fluffier mashed potatoes—velvet-smooth icings and sauces—better, easier food-preparing. Mixmaster's larger Bowl-fit beaters • Automatic Bowl-Speed Control • Automatic Beater Ejector • powerful EVEN-SPEED motor • Automatic Juicer and the famous Mix-Finder Dial are the advantages *you want and deserve* in the food mixer you choose.

Beautifully Styled
MODEL 11

Famous MIX-FINDER DIAL
Scientifically correct mixing speeds right at your fingertips.

SUNBEAM MIXMASTER is also available in gleaming chromium

Larger—follows contour of bowl. All the batter is mixed thoroughly and evenly.



Smaller—set away from sides. Batter escapes mixing, piles up around sides.

only Sunbeam MIXMASTER JUNIOR has all these advantages

- BIGGER BEATERS
- THUMB-TIP CONTROL
- EASY BEATER EJECTOR
- CONVENIENT HEEL REST
- HANGS ON WALL

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The ONLY food mixer with this marvelous Blender Attachment

Enlarge your Sunbeam Mixmaster's usefulness by doing the chopping, shredding, grating for the cakes, icings, and pastries that are mixed to perfection in the Mixmaster. Easily attached to the Mixmaster. Wonderful for fruit drinks, eggnogs, malteds and cocktails, for chopping raw carrots, cabbage, nuts, cheese. Perfect for pureed baby foods, pulverizing, etc.

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XUM

Editor's Chat

HEATING FOR COMFORT

We do not know, or at least recall any better reason for heating. But it is quite common for people to economize on fuel to an extent that results in a home that is a little short of being really comfortable and still warm enough to prevent pipes from freezing or double pneumonia. Cool, dry air may be wholesome and invigorating but it is not, in our experience, pacifying to most of the feminine members of a family. Women and older folks in general like a warm room. Although long woolen underwear may be more logical and economical than more fire, still it is not an acceptable compromise with the women.

This offers another opportunity for electricity to display its versatility. With the stable or declining rates for electricity and the number and variety of appliances for heating it is usually possible to find an electrical heater that will supply just enough more heat in just the right place at just the right time to please almost anyone.

A PRESCRIPTION FOR BACKACHE

A prescription, taken literally and from the Latin tongue, is something that is written before the event. We know it as something the Doctor scribbles so that no one but a druggist can read it. It is often doubted that the druggist can do more than just guess what the Dr. has written and probably a good deal of the benefit is psychological instead of medicinal, especially if the patient is the thrifty sort who wants to get the most for every dollar spent. Be that as it may, and perhaps we are a bit prejudiced, here is a prescription that is legible and tangible and guaranteed to cure at least some of your backaches. Put in motors, belts, conveyors and elevators to do your lifting and lugging for you. Like the druggist, we can only guess what particular application or appliance should come first to cure your worst case, but we do know that motor power is a lot cheaper than man power.

PROMOTE PROJECTS FOR PLEASURE

We don't like to admit it, but most of us need lots of work to do to keep us happy and contented. One big difference between youth and old age is that young folks have lots of projects in mind and plenty of time ahead to do them. Age feels the time limitation and lacks interest in undertaking new projects. That is one of the many extra dividends one may get from having young folks around with projects we may share. They furnish the spark and pep and we may be able to contribute experience and skill. It is one of the reasons the 4-H, FFA and FHA enterprises have been such an outstanding success and one reason why farm life in America is getting better and better every day.

The season is at hand when new projects are laid out for our boys and girls. Don't overlook any opportunity that may come your way to have some share in them. It's fun and will help keep you young. For mothers with teen-age daughters we might point out that cooperative experiments in cooking new and tempting dishes may please your "old man" and promote a pleasant future for some young one.

CHRISTMAS GREETINGS

There are probably many and complicated reasons why Christmas, or the approach of Christmas-time peps up our spirits in general and our generosity and good nature in particular. In spite of the fact that merchandising has pre-empted much of our attention, still there remains much of the spiritual stimulation and we all feel better for the combination of loving and giving. Perhaps no one thing contributes more or is more typical of Christmas-time than lots of bright lights. Streets, stores, windows and finally the Christmas tree and yard decorations and lighting all contribute to the general feeling of brightness and good cheer. We sincerely hope that your Christmas this year will be "bright" and festive.

Jim Rehnke

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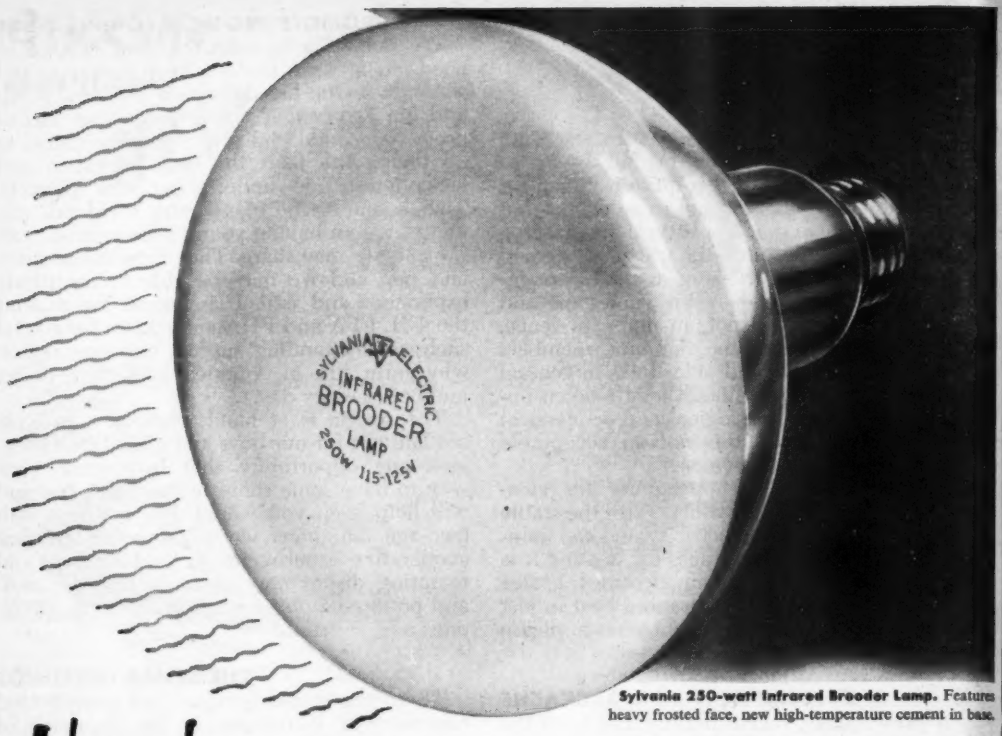

Sylvania 250-watt Infrared Brooder Lamp. Features heavy frosted face, new high-temperature cement in base.

New! Frosted brooder lamp saves livestock lives and costs

Battery of 6 brooder lamps will give you good heating for as many as 750 chicks. Enough surrounding area lets chicks run in and out of heated zone at will.

Now, for the first time, you can share in the benefits of this exciting new development by Sylvania—an infrared heat lamp that is designed from the base up for brooding purposes.

Here's what's new: Heavy frost on the face of the bulb virtually eliminates "hot spots"—diffuses a safer, more even heat over areas below. And new high-temperature cement prevents the glass part from dropping out of the metal base of the lamp, giving your chicks and animals added protection against breakage and falling glass.

In recent years, various Sylvania infrared heat lamps have earned more and more popularity as brooders for chicks, lambs and pigs. They deliver the cleanest, quickest, most efficient heat you can get. That's because infrared energy is converted to heat only when it reaches a body or object. Little energy is wasted in heating air. And you have none of the chores of fueling brooders and carting away ashes.

SYLVANIA ELECTRIC PRODUCTS INC.
Dept. 5L-2912—Lighting Division
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Send for our new illustrated booklet.

"Infrared Heat on Your Farm for Brooding" —get all the latest on infrared brooding and the new Sylvania lamp.

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XUM

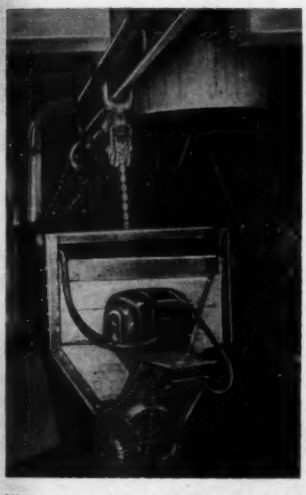
A Feed Box That's Mechanized

Electric Motor and Auger Enables Feeding of 60 Cattle in Eight Minutes

By ARTHUR H. SCHULZ

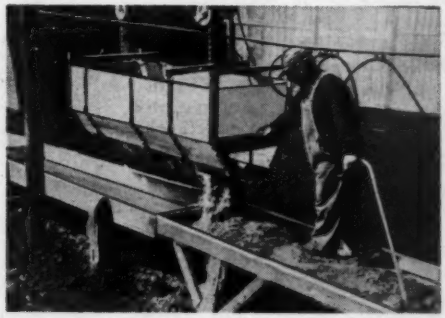
An electric motor driven auger installed in a portable feed box enables Fred R. Topp and Son of McHenry, North Dakota, to feed 40 to 60 head of feeder cattle in from five to eight minutes. Topps had an electric feed mill and silo unloader, and they wanted a portable feed box they could load directly from their silo unloader, add their ground feed and concentrate, move the unit out into the feed lot and mechanically unload the feed directly into the feed bunks.

They built a portable feed box unit that is about thirty inches wide and five feet long. The sheet metal bottom is sloped to accommodate an eight inch auger taken from an old combine. The auger is supported by sleeve bearings on each end of the center shaft. A ¾ hp electric motor drives the auger through the belt and chain driven speed reducers and the gear drive on the auger. The amount of feed placed in the feed bunks is regulated by the speed at which the feed box is pushed over the bunks.



Silage, ground feed, and concentrates are loaded directly into the feed box in the silo room. The auger used for unloading is powered by the ¾ hp motor mounted on the feed box.

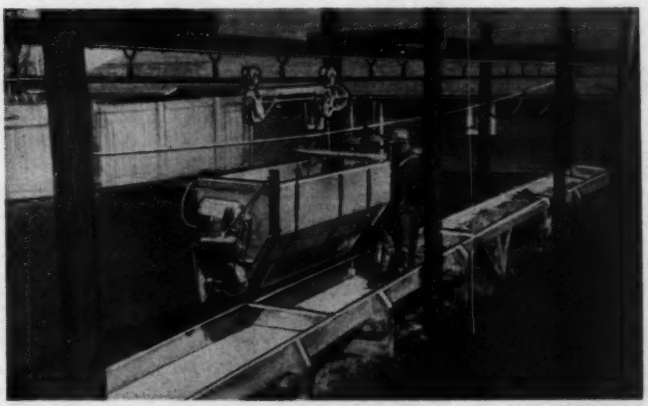
One of the very interesting features of this installation is the method used to overcome the problem of handling the extension cord. The extension cord was first made into a 15 to 18 inch diameter coil. One inch steel rings were taped onto the cord with one ring at the top of each coil. A heavy wire, long enough to reach the length of the feed bunks, was strung through the ring and attached to the end poles that support the overhead track. As the feed box is moved down the row of feed bunks, the extension cord uncoils itself and slides along the heavy wire.



Silage mixed with ground feed pours out of the end of the feed box as it is pushed over the feed bunks. The amount of feed placed in the bunks is regulated by the speed at which the feed box is pushed along. The extension cord is supported by rings taped to the cord and passed over taut overhead wire.

The Topps are well satisfied with their unit. Occasionally the silage bridges over the auger, but Topp carries a showman's cane and a jab into the bridged silage starts it feeding again. Topp thinks a small chain and cross bar apron similar to the type used in a manure spreader would be easier to build than the auger and would very probably reduce the size of the motor that is required to drive the unit. Freezing has not been a problem.

Pushing the unit out over the bunks when the cattle are in the lot has been no problem as the feed box is high enough to avoid hitting the animals' heads. Walking in the feed box eliminates the need to work among the cattle.



The feed box, riding on manure carrier type tracks, is pushed along by hand over the outdoor feeding bunks as the auger unloads it.

Controlled Poultry Environment

Proper Heat, Automatic Ventilation, and Mechanized Feed and Water Handling Assure Profits to Diversified Poultry Farm

By WILLIAM GILMAN

Robert Houle is a Lamoille County, Vermonter who doesn't have a jumbo-sized poultry farm but has it diversified. He has broilers and hatching eggs for main crops and a retail route as a sideline. The eye-opening fact is that he makes money in all three departments.

His diversification consists of around 4,600 laying hens, an average of 200 dressed birds a week, and a retail route where he sells surplus eggs to regular customers. In fact, he even started a rotation program to coincide with the family's Florida winter vacations, with plans for California next year.

Best example of Houle's ability to coast over bad times is the new broiler house with its unique heat-and-fresh-air controls. These, of course, apply to brooding replacement pullets as well as growing meat birds. The house cost $10,000 plus some of his own labor. The first crop earned 32½c per square foot.

This broiler house, which has attracted the attention of farm engineers from several states, is an automatic one requiring only 30 minutes a day of a man's chore time. It's no giant. Its first flock was only 7,500 birds. Yet, it averaged Houle $264 a week profit on birds averaging nine weeks old. Thus, the building's first flock, during a poor broiler market period, paid approximately a quarter of the cost. This was due to things like mortality costing Bob nothing (free birds equalled the few deaths) and a remarkable conversion figure of 2.34 pounds grain to make one pound meat. Both the feed and birds were good, but standard, so equipment and management must take the credit.

Two 1/6 hp, 19 inch, automatically controlled ventilating fans are located on the north wall of each pen. Gentle circulation is provided with no chilling drafts and litter conditions remain ideal.

In odd moments over three years, Bob kept changing his broiler house plans to match up with what he learned. He had seen the threat to success from respiratory diseases, so decided on a building that wouldn't need so many vaccines. He also profited from a tour with other poultrymen, through a well-known broiler area. Houle insisted on a bad winter day, to show conditions at their realistic worst. He saw dripping ceilings, foul litter, coughing birds, and mortality ranging up to 25%.

In his planning, Houle couldn't see the sense of putting up an

Since Houle's building had insulated wall construction, he installed double glass type windows to provide insulation in the window area also. In conjunction with this, ventilation slots with insulated hinged covers were placed above each window. By adjusting these slot openings he can further control his ventilation system to give him the exact amount of air needed. If an area is cold, he restricts the inlet openings to reduce the amount of cold air entering that part of the pen. Likewise, if an area is damp, he increases the inlet opening to provide more cool air for this part of the pen.

insulated building full of non-insulated doors and windows. To use double glass type windows meant they couldn't be opened for ventilation. That didn't faze Bob. Using the old slot idea, he installed home-made slot ventilators above the windows, operated by casement-type adjusters. These slot covers were also insulated with rock wool batts.

Houle considers insulated windows inexpensive when he considers that he has healthier birds;

Houle uses 16 of these 4-bulb infrared lamp units, each equipped with 250 watt bulbs, to take care of 7,500 birds. The combination of a well insulated building and Houle's policy of using a cool ambient temperature to stimulate health and appetite makes possible this large number of birds per lamp.

The fans are automatically controlled with the thermostat shown here. It is centrally located in the room about four feet above the floor.

enjoys a savings of labor by working the fingertip-control slots instead of windows; has no more window breakage due to sudden winds; and does not have to struggle with sashes that stick and bind.

Each floor of the 36 ft. by 108 ft., two-story building is one large pen. He has two automatically controlled, 1/6 hp. ventilating fans on the north wall of each pen. Bob tested 12 in., 16 in., 19 in., 21 in., and 25 in. fans before settling on his 19-inchers. When ventilation is on, ceiling cobwebs lean slightly toward windows instead of being sucked toward fans. This demonstrates how gentle circulation is taking place throughout pen with no chilling drafts as in standard methods. Furthermore, Houle finds that heat from his infrared bulbs is never wasted.

Such things as feeding and watering are automatic, and litter handling is almost that. Instead of a sharp roof, Houle built a hip roof for less than $100 extra (required over 2 more squares of galvanized roofing, but needed less support timbers). This provides a big storage attic instead of head-bumper. This attic holds 30 truckloads, 300 bushels each, of prime summer-gathered sawdust, easily put up with a silage blower. Result is superior litter at only one cent per bushel. It also affords ideal insulation.

In the winter, Bob gets the buildings down to 60° F. by the time the birds are 6 weeks of age. This makes them stir around and develop eager appetites. His recipe for low mortality and fast growth calls for good feed, fresh air, fresh water, and planned management.

In summarizing Houle's successful ventilation system, it has:

1. Well insulated house to conserve available heat.
2. Built-up litter of fine absorbent material that generates some heat to help evaporate moisture in droppings.
3. Drinking devices that minimize water spillage by birds.
4. Controlled air intake with adjustable slot intakes.
5. Electric ventilating fans of sufficient capacity to move the required amount of air.

Feeding 7,500 birds takes less than ½ hour of chore time a day with this automatic feeder. The feeder hopper is loaded by gravity from the floor above.

Electrically Heated Automatic Drinking Bowls Provide Year Round

Trouble-Free Stock Watering

By **GEORGE O. MULLAN**

Pascal Renn, a farmer near Frederick, Md., operates a 770 acre farm where he grows and fattens 250-300 head of beef cattle and 300-400 head of feeder pigs each year. One of Renn's big problems used to be keeping a satisfactory supply of drinking water before both his beef cattle and pigs during the winter.

Renn tried using tanks of various sizes and barrels cut in half in which he installed electrical heating elements. This way of watering was unsatisfactory for several reasons. Renn had animals upset into the tanks and nearly drowned. The floors of the pens around these tanks were sloppy and unsanitary. In very cold weather, they became icy and slippery, making conditions unhealthful and dangerous to both man and animals. The size of these tanks made it a real chore and a disagreeable one to clean and disinfect them. Consequently, it was sometimes neglected. These unsatisfactory conditions resulted in Renn's looking for drinking equipment that would correct these conditions.

One day on a farm he saw some heated drinking bowls which looked good to him. Renn bought three of the bowls and installed them on his farm. Two were installed for the cattle and one for the pigs. He planned for 40 head of fattening cattle or 80 pigs to each bowl. Here, Renn received one of his first savings, finding the cost of installation per animal served was less than any other way he had used in the past.

Renn buys nearly all his cattle and pigs. He keeps them in a pen to themselves, and away from the balance of the herd until they are proved disease-free. With the new drinking bowls here, the floors remain dry and are easy to clean and disinfect. The drinking bowls themselves are very easy to maintain. The saving in cleaning time is important. Only 1/10 as much time is required as formerly. But just as important is the quality of the cleaning job and the ease with which it was done. No one minds doing it.

Through the winter, the temperature dropped as low as 0° F., but the temperature of the water in the bowls was constant at 50-55°. Renn says his cattle and pigs drank more water and grew faster while using less feed. He was not expecting this, so he has no actual figures to prove it, but his years of experienced feeding makes his estimate very reliable. No special meter was used to check the amount of electricity consumed to keep the water at the proper temperature, but Renn said he could hardly tell it on his electric bill.

Here, Renn shows how easily this particular type of water bowl can be cleaned and maintained.

The bowls also conserve water and space. The small amount of room taken up by this bowl made space available for one more steer in the pen than was possible when the water tank was used. Most of the water was saved because the animals did not play with it, slopping it over the floor and wasting it.

Only one thing was unsatisfactory at the beginning. Some of the bowls did not cut off properly, letting water seep out. On testing, it was found the cut-off valves were improperly sized according to the water pressure. When the proper sized ones were installed, this condition was corrected and the bowls operated with no more trouble.

Renn believes that he found the answer to his problems. He likes the water bowls very much . . . so much that he is more than doubling the number of his installations this year.

A GENERAL ELECTRIC PROGRESS REPORT:

Infrared brooding and the effect of bright lights on chicks

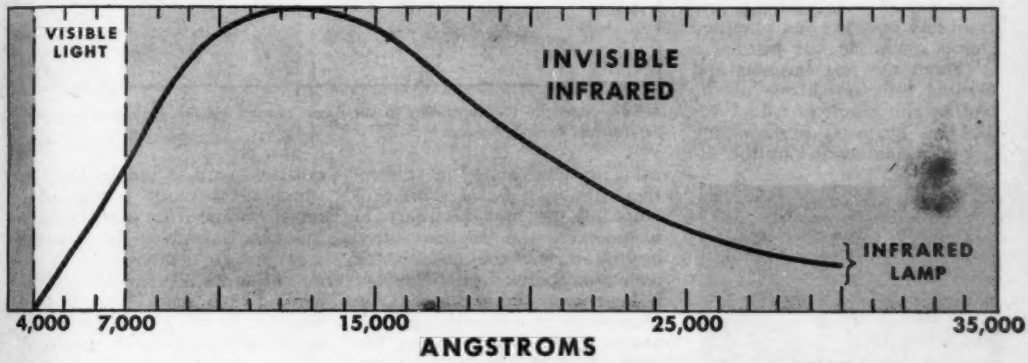
NOW science throws some light of its own on the belief that bright light from infrared lamps has strange effects on chicks.

Only a small fraction of the "light" from infrared lamps is visible. With the General Electric 250-watt white infrared lamp, only *ten* watts produce visible light. (With regular lighting lamps, up to 7 times the wattage produces visible light.)

Infrared lamps in conventional brooders provide only a fraction of the 1,000 footcandles of light coming through windows of a poultry house on a sunny day. Direct sunlight is ten times stronger yet. Compared to these harmless light sources, light from infrared brooding lamps is dim.

Experiments show bright light from infrared lamps has no adverse effect on chicks' appetites. When light falls below two footcandles, chicks tend to stop feeding and go to roost.

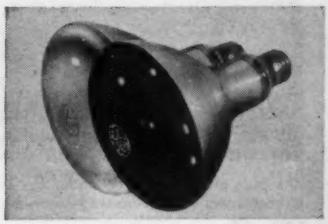
When you buy infrared lamps, buy the lamp that lets all the heat through, the G. E. *white* infrared lamp. Clear-glass lens, 250 watt size only $1.10. Large Lamp Department, General Electric, Nela Park, Cleveland 12, Ohio.



Only 4% of the wattage of the G-E 250-watt white infrared lamp goes into visible light. Yet the light contains *all* the colors chicks see by.

Tests indicate that chicks' eyes have peak sensitivity to red light, and are practically blind to blue.

Even in clusters, General Electric white infrared lamps provide only a fraction of the light outdoors or by windows.



Two G-E infrared lamps—white (left) and deluxe hard-glass model, that will not crack if spattered with water (right).

Progress Is Our Most Important Product

GENERAL ELECTRIC

Supplemental Heat at Birth Saves Pigs

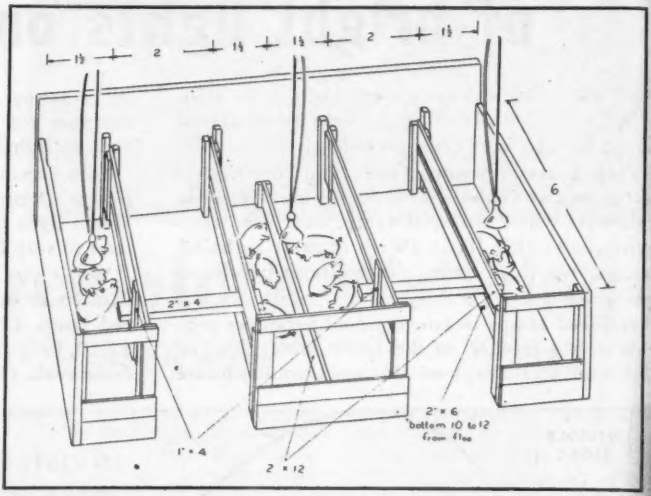
Farrowing Jackets Equipped with Infrared Lamps Protect Against Cold Temperatures and Injury by Sow

John Ben Bomar, owner of a feed, seed and fertilizer company in Tuscaloosa, Alabama, has long been of the opinion that he could do a much better job in helping his farm customers if he had a first hand knowledge of their problems. Being a man of action, he bought a farm on the outskirts of Tuscaloosa with the intention of putting in a flock of laying hens and a few hogs. At the Southeast Duroc Congress in 1950 he purchased three purebred Duroc gilts to start his hog program. He saved fifteen of the twenty-one pigs farrowed by the two bred gilts the first year.

Since then, Bomar has strengthened his breeding program and now has ten purebred Duroc sows. He has learned a lot about the hog business and his hog program is one of the best in the country. All of his pigs are farrowed in farrowing jackets recommended by the Alabama Extension Service. Last year the percentage of pigs he saved was up considerably.

The pigs are comfortable under the infrared lamp and are well protected from sow.

Bomar says that while there are several factors which enter into a good breeding program, he believes the addition of supplemental heat at birth is one of the primary considerations. He is using infrared lamps in connection with each jacket. This provides all the heat necessary to keep even the biggest litter healthy during the first ten or twelve days after birth. The sow is kept away from the pigs by placing her in a boarded pen adjacent to the space where the lamp is found. Pigs can get under the board to suckle, but the sow cannot mash them. After feeding time the pigs quickly seek the warmth at the infrared lamp and are content to lie there, out of reach of the sow, until feeding time again. This, Bomar believes, is one of the principal secrets of success in his program.



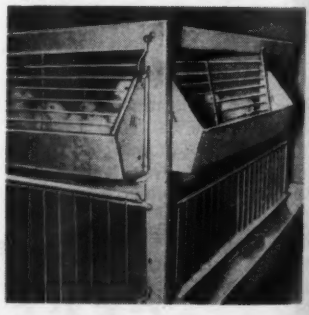
A line sketch of the farrowing jacket recommended by the Alabama Extension Service and used by Bomar.

WALTER L. BAKER

Battery Chick Brooder Ideal for Small Operator

As a busy mother and farm wife, have you been depriving your family of fried chicken because you could not afford a brooder house or spare the time that large scale equipment requires to raise broilers?

"Seven and one half minutes, morning and evening, with a three deck, all metal battery will give you chicken every Sunday and a surplus for your freezer, plus pin money. My fifty chick size battery is only 24 inches wide, 86 inches long, and 50 inches high. It has the heating



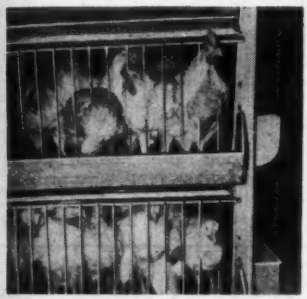
All the chicks are kept in the upper deck for the first five weeks.

unit in the top deck only and takes very little electricity.

"If the battery is kept out of direct drafts, there is little danger of chilling. Chicks instinctively dart back to the heating unit as they feed and drink if they feel cool. After you have divided and put your first batch of chicks into the lower decks at five weeks, a 200 watt light bulb, shielded by a piece of thin metal, can be hung outside the battery to provide extra heat for these chicks.

"When a battery is used, it isn't necessary to have a finishing battery or outside coop. Just start twenty five chicks instead of fifty and allow an extra week after dividing and moving them down at five weeks before putting a new batch of day old chicks in the upper deck.

"By starting twenty-five to fifty chicks every six to eight weeks



After five weeks the chicks are divided equally between upper and lower decks.

the year round, you can have fresh chickens for your table, keep your freezer supplied, and sell clean, tender broilers at a fancy price. Or a complete run of pullets will sell at a nice profit to someone wishing to add to or start a laying flock.

"The first two hundred chicks I ran through our battery gave us all the chicken we wanted on the table. The profit on those sold paid for the battery and added a dozen choice hens to our laying flock—in less than six months time. It is such fun to watch them grow and takes less trouble and time than operating a brooder house. No danger of smothering, no worry about maintaining even room temperatures, and no stooping."

IRENE BURKETT
San Antonio, Tex.

"I SAVE $2 A DAY with my bulk milk handling system,"

says Kelsey H. Schilling, Middleport, N. Y.

Mr. Schilling figures that his Stainless Steel bulk milk tank will pay for itself in just three years. Handling costs are lower because it is easier to handle and ship milk. The pick-up truck driver loads and unloads the milk without any assistance, and hauls a larger "pay load" each trip.

Milk quality has shown improvement, too. After Mr. Schilling installed his 300-gallon Stainless Steel tank, the bacteria count dropped from 100,000 to less than *20,000*. Also, there is less stickage.

United States Steel has prepared an easy-to-read informative booklet that tells all about the bulk milk handling system. Just send the coupon for your free copy.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
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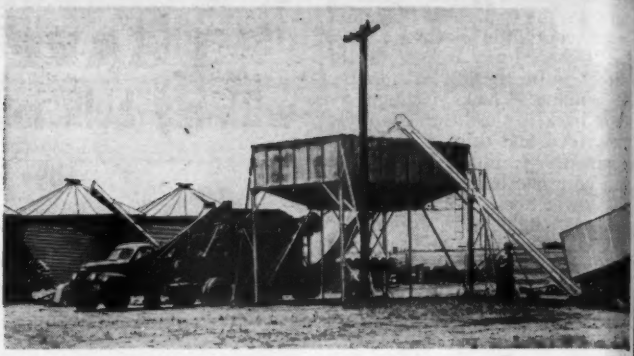
UNITED STATES STEEL

A Mechanized Grain Handling Operation



Arthur St. Louis of Hamilton, California, would find it very difficult to get along without electric power, especially with the job of handling grain on his ranch. Elevators move the grain in and out of two special overhead bins and three grain storage tanks.

The bins have a three-fold purpose. They hold grain for arrival of transport trucks. Seed grain is stored in them to await arrival of a commercial portable cleaning plant. They also provide winter storage for grain fed to poultry.

The two 32 ton bins, joined to look like one, are filled by means of an elevator with a 3 hp electric motor. Each bin has two openings in the bottom. They set high enough and with a wide enough opening that a large bulk grain truck and trailer can drive under them, load in a few moments by opening the trap doors, and go on to the grain elevators without bothering the ranch helpers.

St. Louis grows all his own seed for planting almost two thousand acres of grain each year. The seed grain is first trucked in from the field in a bulk truck. It is then dumped and lifted into the overhead bulk bins with an elevator. A portable seed cleaning outfit is set between the overhead grain bins and the three 2200 bushel seed storage tanks. Seed is taken from bottom doors in the bins and fed by gravity to the seed cleaning machine. A portable elevator with a 3 hp motor lifts the cleaned seed from the cleaner to the storage tanks.

At the end of the harvest season, after all the seed grain is cleaned and stored, he uses the bins for storage of grain to be used for winter poultry feeding.

St. Louis has found that his bulk grain handling arrangement has saved him many hours of time plus the elimination of manually handling several thousand bushels of grain each year.

F. LELAND ELAM

Store Sweet Potatoes Without Spoilage

Farmers who raise sweet potatoes are faced each year with the problem of storing the potatoes without spoilage. These farm families depend on sweet potatoes as one of the mainstays of their diet. This means storing them well into the Spring. To assist them in this problem, North Carolina State College made some studies on a test house suitable for on-the-farm sweet potato storage.

The College used a small house in which they stored 64 bushels for 7 months. The temperature was held at 85°F. for the initial 8 day (curing period) to heal the cuts or "cork them over". Then the temperature was dropped to 55°F. for the remainder of the storage period. The temperature was maintained at 55° during cold weather by use of a 60 ft. length of thermostatically controlled electric soil heating cable. Despite a cold winter at Raleigh with temperatures down to about 15°F. for 8 or 10 days, the new storage house gave excellent performance. Of the 64 bushels placed in storage, 57½ bu. graded U.S. #1 when they were stored. At the end of the 7 month storage period 49½ bu. graded #1, 6 bu. were #2, 3 bu. were culls, and 5½ bu. were lost due to shrinkage. This is a vast improvement over hill or bank storage. The total KWHr consumption for the 7 month period was 590.

The College emphasizes that this structure is ideal for the small grower. The Raleigh house cost $150 for materials, excluding labor. Plans available from North Carolina State College, Extension Agricultural Engineering, Raleigh, N.C.

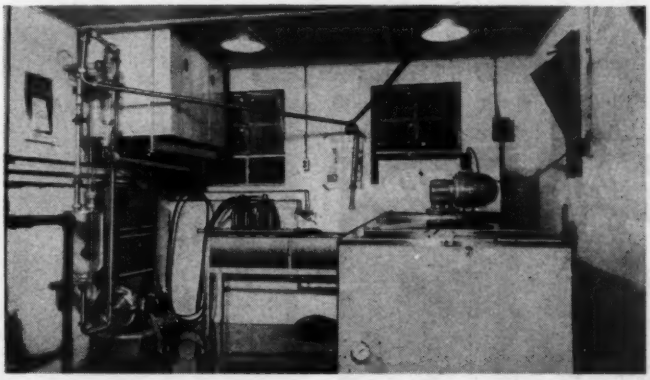
This 64-bushel Raleigh storage house is heated with a 60 ft., thermostatically controlled, electric heating cable. Walls, ceiling and door are all insulated with fiberglass insulation.

Milkhouse Lighting and Cleanliness Go Together

When W. Y. Lee of Doylestown, Penna., planned his new milkhouse he placed special emphasis on cleanliness. Equipment and arrangements had to be both orderly and easy to keep clean. Lighting inevitably had to play an important part in such a program of cleanliness. Therefore, when Lee laid down the requirements for lighting he said, "The light should be so arranged that one can see anywhere. There should be no dark corners."

To fulfill these specifications the many variations of lighting layouts were studied. The one finally selected, which also is inexpensive to install, made use of an ordinary porcelain on steel reflector (trade designation RLM) and a porcelain socket mounted on an ordinary outlet box. Two of these were placed over the wash tanks and one in the center of the remaining area forming a triangular pattern on the ceiling. In order that the fixtures would be flush with the ceiling, round holes ¼" less than the diameter of the fixtures were cut in the ceiling material and the porcelain fixtures set in. Each fixture was supplied with a 200 watt bulb.

Lee is convinced that the excellent working conditions and clean appearance of his milkhouse is due to his adequate lighting job. His experience certainly makes it well worth the cost of installing and operating such a system in any modern milkhouse. BRUCE FEARN



A milkhouse that is clean and properly illuminated is a pride to the owner and a credit to the industry. This house has three 200 watt lamps in the ceiling.

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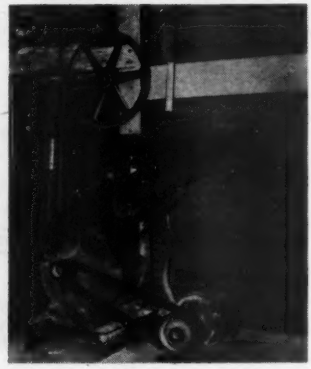
Feed Processing Plant

One Man Prepares Rations for 350 Herefords

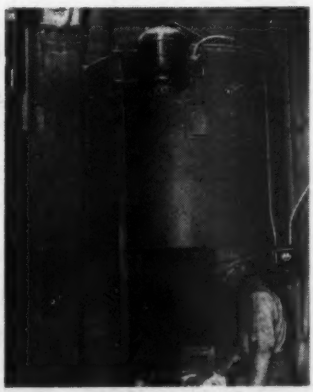
The Kaiser brothers, Al, Herb and William, of Huron, Ohio, have a feed preparation plant that prepares the feed rations for 350 head of Hereford cattle. They did most of the work in design and construction of the mill themselves. The feed is moved into the preparation area by conveyors. Two corn cribs, each 100 ft. long, unload directly into the mill by drag lines. They are also equipped to use self-unloading wagons to distribute the feed into the feed bunkers located in their barns and feed lots. The chief advantage of this system to the Kaiser brothers is the saving of time and labor.

Their breeding herd receives a ration of ground corn cobs mixed with concentrates and some hay. The only ingredients not produced on the farm are the concentrates and some of the corn cobs. These corn cobs are obtained from the local elevator without cost. Freshly ground and mixed feed is more palatable and nutritious than feed that has been standing around for some time.

CLYDE F. ROBERTS



The feed grinder is fed directly from a drag line conveyor.



Ingredients are placed in feed mixer by means of gravity and a blower.

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Once upon a time there was a very mean army officer—he was rotten to the corps. (Caw! Caw!) . . . . SODDEN THOUGHT: Life DOESN'T begin at 40 for the fellow who went like 60 when he was 20 . . . . DRAFT BOARD: the world's largest travel agency . . . . SOFA: home stretch . . . . Ma Larkey sez: "People who live beyond their means should act their WAGE." . . . . About the ONLY thing that goes as far today as it did ten years ago is the DIME that rolls under the bed . . . . We don't know the author of this'n, but we LOVE it: "Every woman needs FIVE husbands—an intellectual companion, a muscular toiler, a financial genius, a romantic playboy, and a practical plumber. Every MAN needs FIVE wives—a movie sweetheart, an English valet, a hotel chef, an attentive audience, and—a trained nurse." . . . . Old baseball players never die, they just FAN away . . . . LIMERICK DEPT.: A foolish old hunter named KERR Wore a cap that was made out of FERR. He was shot for a BUNNY, Don't laugh, it's NOT FUNNY—SUCH accidents often OKKER . . . . EVERSTOPTO-THINK?—a NECESSARY EVIL is one we like SO much we just don't want to abolish it . . . . SNICKERSNORT - OF - THE - MONTH: A famous English wit claimed he could make a pun on any subject. When asked to do so at a banquet, he queried: "Will someone name a subject?" "The King!" cried a fellow in the audience. Without a moment's hesitation, the punster punned: "The King is NOT a SUBJECT!" . . . . EXAM PAPER GEM: "Julius Caesar was a Roman conqueror who was HAILED when he REIGNED." . . . . CALIFORNIA: a place where it NEVER freezes UNTIL you've bought an orange grove . . . . FAWN: a DEER child . . . . EUPHONY is that harmonious quality of the voice when a woman stops scolding her hubby to answer the phone . . . . No matter what her other characteristics, EVE was an original woman if there ever was one . . . . Two can live as cheaply as one, but not as quietly . . . . PARTING THOUGHT: A finger print expert is a fellow whose life is always in a WHORL . . . .

Your pun-peddler—DUFFY.

"Chickens in a Cave"

Underground Limestone Quarry Makes Ideal Chicken House

By J. H. EBBINGHAUS

The Martins at Milltown, Indiana, have converted an abandoned underground limestone quarry into a modern scientific chicken house. Although the chickens never see daylight, their laying capacity is unaffected as long as they have proper feeding, watering and lighting.

In prior years, limestone for agricultural and other uses was mined and left a series of underground caverns in which a constant temperature of 60° to 62°F. is maintained throughout the year. Martin more or less stumbled onto the thought of using these abandoned caverns for his chickens. He felt the cool air coming out of the cave in the summer time and thought to himself how ideal this temperature would be for his laying flocks. He contacted the owners of the property and leased it.

Ventilating fans, mounted in concrete block wall, are used to move air through each tunnel housing birds.

The operation was started in the underground hen house nearly two years ago and the success has been everything that was expected. Interest is running high not only from the other chicken producers in the area, but from Purdue University and the USDA. He now has 25,000 laying hens in the cave.

The chickens are moved into the cave when they are 8 to 10 weeks old. Approximately 5,000 to 8,000 chickens are housed in each tunnel. The tunnels are arranged such that one end is blocked off with concrete blocks and fans are mounted in the walls to draw the air through the tunnel. The other end is left open to supply fresh air. The air flow rate is adjusted so that the area housing chickens will remain dry the year round. For each 5,000 birds there are two 1 hp fans discharging into the open air. This air movement is sufficient to pick up moisture from the litter and keep it in a dry, satisfactory condition throughout the summer months.

The lighting units used are standard 40 watt bulbs with reflectors. This provides a light concentration at the feeding level of from one to three foot candles. Water for the birds is supplied from an 80 ft. well equipped with a 1 hp submersible pump. Automatic water fountains are used throughout the set-up.

The hens that are used for egg production alone maintain from 70% to 80% production. When the hens start to drop off in production to a point where it is not advisable to keep them, they are sold. The cave is cleaned and a new bunch of pullets put in their place. Some of Martin's present laying hens have been in the cave over a year to date and their production is still high.

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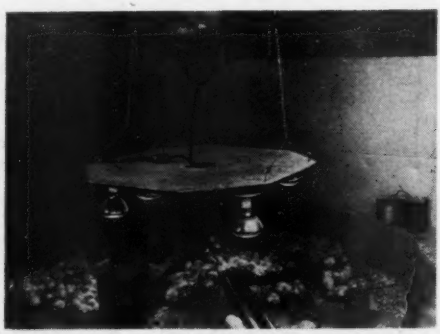
New Control Unit for Infrared Brooders

Proportional Time-Temperature Controller, Developed by USDA, Uses Both Time and Temperature to Activate Switches

A new method of temperature control for infrared lamps used in poultry brooders has been developed by U. S. D. A. engineers. The basic control device, which has received public patent No. 2,702,843, utilizes a combination of time and temperature as a means of activating the switch units. It turns the lamps on and off for various intervals of a fixed time cycle. The length of the interval is dependent upon the surrounding or ambient temperature.



Here, the controller (black box in lower left) is used on an experimental test run to control a 4-lamp brooder.

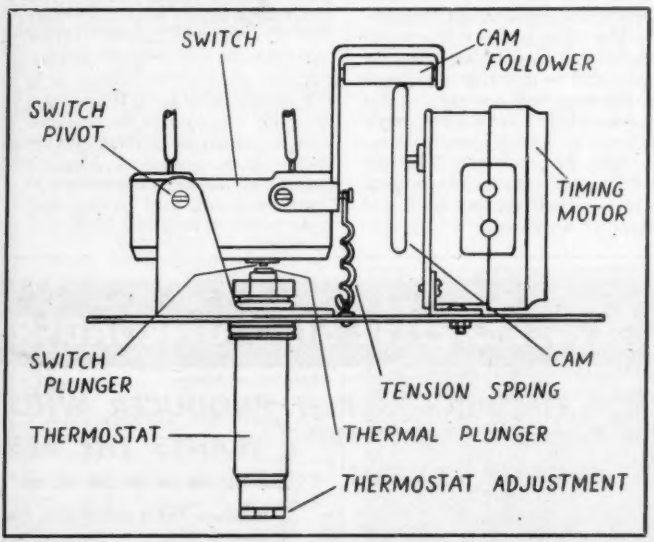
It has been found through research that day-old chicks need no auxiliary heat when indoor ambient or room temperature is at 94°F. At an ambient temperature of 34°F, enough infrared lamps to maintain chick comfort should be kept on continuously. At 64°F, fifty percent as much heat is needed as at 34°F.

The temperature controller has a fixed time cycle of 60 seconds. When full heat is required (34°F) the lamps are on for the entire 60 seconds. At 94°F, no heat is required and they are off during the entire cycle. At 64°F, when fifty percent heat is required, the unit turns the lamps on for 30 seconds and off for 30 seconds. The controller follows this same pattern throughout the temperature range between 94°F and 34°F. The lamps are on one additional second for each 1°F drop in temperature in the above range. As the chicks grow older, the temperature limits may be lowered. For one week old chicks a range of 90°F to 30°F is used.

A temperature controller of this type has several advantages, some of which are:

1. A continuous control system giving maximum chick comfort and operating economy at all room temperatures.
2. A controller that may be used for a single lamp or for multiple brooder installations.
3. A system permitting lamps to be operated at design voltages (115 volt), thus achieving a higher efficiency than that possible with systems which reduce lamp voltage as a means of control.

This controller has proved very satisfactory on experimental test runs. As yet it is not commercially available. A public patent has been received on it and expectations are that in the very near future some manufacturer will produce the unit commercially.



A schematic drawing of the proportional time-temperature controller. When the switch plunger is extended out, the switch is closed. As the thermal plunger raises, due to warming of the surrounding air, contact is made with the switch plunger and the switch is opened. At the same time the cam on the timing motor rocks the entire switch about its pivot point, once every 60 seconds. As the switch is thus lifted, it is closed a certain period during each minute. The length of this period depends upon the position of the thermal plunger. This position changes with air temperature changes.

An Automatic Barn Cleaner will save 150 hours of labor per year on a 30-cow herd according to University of Wisconsin engineers. This saving may not be important in the winter months, but in the fall and spring when field work is pressing it is worth a lot.

Hydraulic Barn Cleaner

The Knickerbocker Farm of Amsterdam, N. Y. uses an electrically powered hydraulic barn cleaner in their newest barn. The system has proven to be entirely dependable and requires a minimum of maintenance.

The Knickerbocker barn is built of concrete blocks and has a total of 42 stanchions arranged in two rows. The layout saves labor in feeding, cleaning and handling milk. The light, airy interior encourages sanitation by keeping moisture and odors at a minimum.

Close-up view of the 3 inch by 8 ft. hydraulic cylinder which imparts a reciprocating motion to the hinged bars.

In each of the two gutters a push bar, with hinged gutter bars attached, runs the length of the stanchion row. Each push bar is attached to an eight-foot by two-inch hydraulic cylinder. Hydraulic pressure to the cylinders is supplied by a 2 hp motor directly coupled to a two-way hydraulic pump. The pump forces hydraulic oil to each end of the cylinder, alternately, to produce a reciprocating motion in the gutter cleanout.

A 2 hp electric motor drives the gear pump to build up hydraulic pressure.

Schuyler G. Voorhees, owner of the Knickerbocker farm, is sold on the electro-hydraulic system and thinks his investment is bringing a good return in labor saved.

Mix Paint with Power Drill

Use your power drill for mixing paint. It will do an excellent job and save you time and arm tiring labor. Frank Schultz, Franklin, Calif., does just that.

Schultz fixed up an 18 inch ¼ inch diameter rod to fit into his hand power drill. He bent the other end of the rod to a flat hook shape giving a beater like surface. The length of the rod was to allow handling in 5 gallon size paint buckets, as well as smaller containers.

The beater surface not only stirs and mixes the paint in about one fifth the time it took to do it with a paddle, but it does it more thoroughly. It rides well on the bottom of the container where it lifts thick paint into a mixing position.

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Xmas Gifts With a Personal Touch

Connecticut Family Makes Theirs With Electric Sewing Machine

Christmas is coming and in the home of the George Klug family preparations are under way for the happy gift-giving season. Here, Diana uses the binder attachment on the family electric sewing machine to put finishing touches on the second of a pair of Christmasy Candy Cane Bib Aprons for a favorite one year old. On our cover Diana is joined by her mother and sister, Ruth-Ann, in preparing for Christmas. Ruth-Ann and her mother have discovered that early gift sewing also means early gift wrapping to save the usual frantic Christmas Eve rush. Ruth-Ann receives two gaily wrapped packages from her mother to add to the pile she has in her arms.

"Do your Christmas sewing now!" That's good money-saving advice for everyone with holiday gift lists to fill—and a leading Connecticut farm family will tell you that it can be lots of fun besides!

The efficient modern dairy farm of the George E. Klug family, Torrington, Connecticut, is equipped with a variety of up-to-date machinery, but perhaps the busiest unit of all during this pre-Christmas season is the family electric sewing machine. It's the special "shopping center" of attractive Mrs. Klug and her two charming daughters Diana, 17, and Ruth-Ann, 14, as seen on our cover picture. From it comes all sorts of exciting sew-it-yourself projects, including lovely and elaborate party dresses and simple blouses and skirts.

Both Diana and Ruth-Ann have been active in 4-H Club clothing projects since they were old enough to join the organization. And their mother as a busy 4-H leader has taught them to sew like experts. Every other Saturday, in fact, the pleasant Klug living room is buzzing with activity as 10 4-H club members from the neighborhood come in for their meeting.

To her own daughters and this eager group of farm girls, Mrs. Klug has opened up a wonderful world of home sewing. And at the same time, she has solved Christmas shopping problems for all of them.

By simply varying the easy-to-use attachments on their sewing machine, Mrs. Klug, Diana, and Ruth-Ann have discovered that they can make a wonderful variety of gifts to suit everyone from young George Jr., age 9, and Mr. Klug to their aunts and friends including small-fry and grown-ups alike.

Such special touches and expensive looking details as quilting, fine ruffling, tiny tucks, narrow hems, cording, appliqueing, binding, and making perfect buttonholes—even creating lovely designs with decorative stitches—are no trouble at all with the use of the clever little attachments which fit on the machine.

Most of these attachments are supplied with all leading electric standard-make sewing machines, and others are available at a moderate cost. Using them, the Klugs and everyone who sews find they provide exciting shortcuts to gift-making, both tailored and fancy. The results are those really "personalized" presents you can't buy in stores.

Here are a few of the interesting Christmas gifts you can create to please just about everyone on your list this year.

Candy Cane Bib Apron

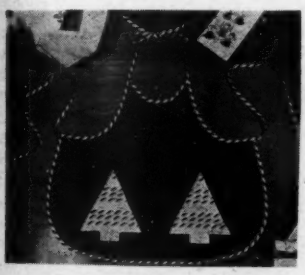
A gift for the younger set that is all dressed up for the holidays is this easy-to-make bib. Use the decorative stitch and binder attachments for the machine. This

is the bib that Diana is making on our cover picture.

The materials required for this are ½ yd. dark green Indian Head or similar fabric (will make two aprons) ¼ yard white Indian head, 3 pkgs. No. 5 red and white striped, single fold bias binding, and one spool white thread.

Cut out the apron according to the length of the child's clothes and broad enough to go around the child. An old apron or bib may be used as a pattern. Cut out the triangular shaped trees from the white material and baste strips of striped bias across the front as in the picture. Next baste the trees to the apron.

Using the decorative stitch attachment for the machine, finish edge of bias strips with zigzag stitch. Then using the same stitch fasten the trees to the apron. Cut away the surplus material from around the trees, close to the zigzag stitches. Next bind the lower and neck edges of the apron using the multiple slotted binder attachment to finish the armhole and to make



neck and waist ties, use the binder again. Allow 16 inches of the bias to be folded and stitched before inserting edges of apron into binder. After the armhole is bound continue stitching the folded bias for another 16 inches to make the tie. This process is repeated for the other armhole.

Monogrammed Place Mat and Napkin Set

This monogrammed set is "hers alone" for many different table settings. And its easily made with the use of the decorative stitch attachment for the sewing machine.

To make this set use 1½ yds. colored Indian Head (makes 4 mats and 4 napkins) ¾ yard white Indian Head, 2 spools thread to match colored fabric and ½ yd. tarlatan.

Cut place mats 18 inches by

12 inches and napkins 15 by 15 inches. Mark the oblong medallions 5½ inches by 3 inches on white fabric. Then cut out allowing ½ inch margin around the marking. Baste a medallion in the upper right hand corner of the mat ¾ inch from edge. Also baste one in the lower right hand corner of the napkin. Using the decorative stitch attachment sew the medallion to the mats and napkins. Cut away the extra fabric close to the zigzag stitches.

Trace the outline of initials desired on colored material. Cut out allowing ½ inch margin on all sides. Baste in place on the medallion and stitch again with the attachment. Cut away extra material. Still using this attachment, place a line of zigzag stitches around mat and napkin ½ inch from edge. This should be done over tarlatan, which is removed after stitching is completed. Fringe the edges to complete the mat set.

Appliqued Western Shirt

What boy's eyes wouldn't light up on Christmas morning to receive a western shirt. You can make it at a low cost with the use of your sewing machine attachments. Select a pattern you like from any of the patterns available. Use cotton gabardine for the material.

Here are some helpful short cuts to use in making the shirt. For appliques, trace designs on the wrong side of the material using a tracing wheel. Cut out each motif on the traced line and place it on the right side of the shirtpiece. Cover each motif with a piece of tarlatan and baste in place. Using the hemstitcher, stitch around the applique. Adjust the attachment according to instruction book. The tarlatan is not removed until the shirt is completed.

For the corded trim, cut bias strips ¾ inch wide. Join the bias to make a strip 2 yards long. Using the cording and zipper foot cover a piece of heavy cord with the bias strip stitching in place. Apply the cording to the pieces of shirt according to pattern directions. After the shirt has been assembled, use the buttonhole attachment to make buttonholes.

Party Pinafore

She'll be pretty as a picture in this dainty pinafore whether worn separate or over a dark dress. The secret in making this attractive gift is in using the attachments. Select your own pinafore pattern and follow these hints.

Strips for the ruffles were hemmed by the narrow hemmer attachment which also hemmed the big bow on the back. The decorative stitched on ruffles and bib are automatically done with

the decorative stitch attachment. The perfect ruffles are made with the ruffler and attached at the same time in a fraction of the time it would take to do them by hand. To complete the pinafore make the buttonholes with the buttonhole attachment.

By letting the machine and its attachments do the work, you will have a number of attractive Christmas gifts ready for family or friends. And think of all the fun and personal satisfaction involved from having completed all these projects by yourself!

One of the nicest ways to greet neighbors and friends is with a warm welcoming glow at your doorway this Christmas. Here the lighted plastic snowman serves as a holiday host amid strings of gaily colored outdoor lights and feathery Christmas greens.

Say "Merry Christmas" *with Light*

This Christmas use "light" to share cheer with all who pass or enter your home. Let your holiday hospitality begin with a warm glow at your own front door and then carry it into the home. With the variety of material available you can let your imagination and budget be your guide. What fun it will be for the family to plan for and decorate their home! Here is the opportunity to develop the sharing spirit of Christmas and to paint a cheery picture for all to enjoy.

A simple and easy decoration is to use a string of colored outdoor lights and ropes of evergreen to outline the door and entryway. They may frame a spray of evergreen, cluster of ribbon, or other decoration placed on the door. Beside the door a lighted plastic snowman, Santa, or other figure will glow after dark to add its word of welcome.

Now let's look inside. The fireplace provides a natural setting for Christmas decorations. Here again is a place you can let your imagination work. We will give you a few suggestions and you can develop them.

An attractive decoration is to cover small pines with soap snow, which is made by whipping sudsing soap or detergent in a small amount of water and placing the foam on the branches. Place these trees on each end of the mantel and group carolers in the center on a bank of styrofoam. The carolers are made by using 10 watt S11 Christmas tree light bulbs for the heads. A 16 inch heavy wire is fastened with the center around the socket of the bulb and the ends forming the legs. Clothes are cut out of material or felt, and fitted over the wire. An 8-inch piece is placed through the sleeves to form hands for small mittens. Make small songbooks out of construction paper and paint the faces and hair on the carolers with quick drying enamel. The wire legs are forced into the styrofoam to make the figures stand upright.

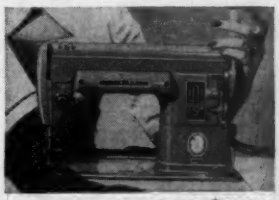
Christmas greens, balls, lights, and cardboard Santas combine to make another attractive mantel setting. If there is a mirror, outline it with a rope of greens and arrange the other decorations on the mantel.

It wouldn't be Christmas without the customary tree. In stringing the lights on a tree start at the top and work down. Place lights on the inside boughs first and work from the trunk outward. Light each string as it is placed and then stand back to view the work before placing the next string.

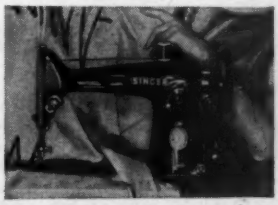
Successful Christmas lighting does not depend on lavish and costly displays. Too much will spoil the sincerity of the holiday greeting. Light is a decoration in itself. A little goes a long way in setting the holiday mood.

Left: To decorate the fireplace mantel, try a trio of glowing candles against a background of tinsel, holly, and greens. Set a three-light halo of red and white to provide the artistic arrangement shown. Tiny C-7½ Christmas tree lights concealed under fire-proof cotton "snow" give it a soft glow. **Right:** Tree decorating is the center of Christmas Eve activity. Work from top downward and trunk outward when stringing lights. Light each string as you work to view the effect. Add trimmings later.

There's nothing like a **SINGER**-any **SINGER** —to give a woman a real gift for sewing!



Exclusive! The Slant-Needle *SINGER
—The only machine with a needle that slants *toward* you instead of being straight up and down—lets you see better, sew more easily.



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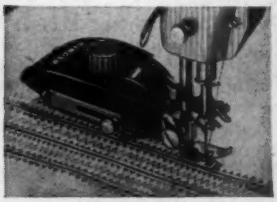

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does hundreds of stitch variations as simply as it sews a straight seam

Here's a remarkable new machine that will give you the greatest gift in the world for beautiful sewing.

The new Swing-Needle* SINGER Automatic does smoothest *straight* sewing plus hundreds of decorative stitches—*completely automatically.*

Stop in—try it. See how *easy* it makes even the fanciest sewing!

It's the latest addition to SINGER's widest choice in the world of machines —Christmas favorites over *100 years.*

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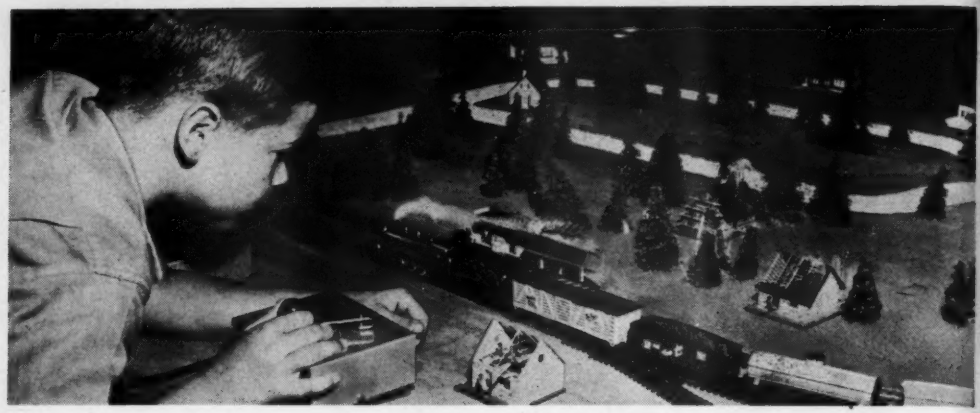
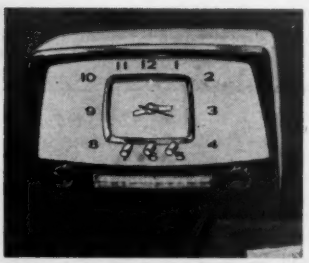


Electrical Hobby Gifts Help Santa

Bring Enjoyment to Every Member of the Family

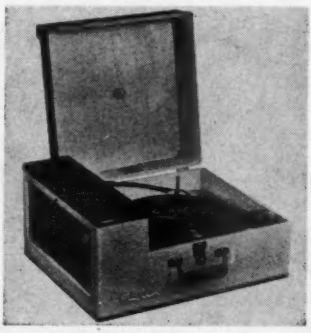
The puzzling problem of what to give for Christmas is easily solved if the family or individual has a hobby. You're sure to find something in the electrical field that will provide extra hours of enjoyment in the pursuance of this special interest. And for the person who claims to have no hobby now is the time to start him in this fascinating American pastime.

For all those "kids at heart," whether age 8 or 80, we must list the favorite Christmas gift—the electric train. To suit the interests of the receiver there are streamlined diesels and numerous freight units. And then there are the extras such as automatic cars, uncouplers, extra track, signals, and many others to add to the set already owned.



Clock-radios, used as alarms, can be set to turn off radio automatically after listener falls asleep. It will turn on again automatically at preset hour to furnish wake up music.

Some activities are participated in by all members of the family. Music and photography are two of these favorites. Whether one or more members of the family create the music or they listen and appreciate it, it has a wholesome effect on all. There are instruments for each to use from radios to organs.



Record players are available to handle 33⅓, 45, or 78 rpm records.

In the radio grouping there is one to fit every need from the small one for listening while working to the clock radio for bedtime lullabys and pleasant musical awakening. And we have the short wave sets for round-the-world listening.

For selected musical numbers we look to the phonograph. Here again we find a variety from the small easy-to-operate set for Junior to the Hi-Fi and long playing units. There is one to fit every need and pocketbook. Along this same line we must not forget the recorders to preserve family voices, children's activities, or favorite music.

Electrical musical instruments range from the electric guitar to the regular or chord organs. Any type of instrument may also be equipped with an electrical pick-up, which can be attached to a public address system.

A projector for 2 x 2 colored slides helps to "relive" those memorable moments captured by the camera.

Photography has been increasing in popularity. It is marvelous to have a permanent record of trips or outstanding activities. And what better way to relive each of the experiences than by

NEW LIQUI-BLENDER makes modern, hurry-up meals *easy!* New "Cut-'n-Fold" action blends faster, cuts finer, for quicker, tastier dishes. Blends soups, casseroles—dozens of treats. Gives twice the usual cutting power. Just **$39.50** (white), **$44.50** (chrome).

NEW FOOD MIXER blends ingredients perfectly, right up to edge of bowl—ends hit-or-miss mixing! No unmixed "pockets" or dry-center lumps. New beaters combined with Bowl-Control action assure smooth, even mixes. Juice extractor sold separately, $4.00. White enamel mixer with 2 Pyrex bowls, **$39.95;** with Mix Timer, **$43.95.** Chrome-finish mixer and 2 stainless steel bowls, $10 additional.

NEW MIXETTE fits *her* hand, *her* kitchen, and *your* purse! Balance-tested for *easy* handling. New 3-speed control on handle. New finer-blending beaters with positive ejector. Stands on end for easy draining. White enamel, **$19.50;** chrome, **$21.50.**

Hm! Wonder why only **HAMILTON BEACH** mixers have a 5-YEAR Guarantee!

NEW HOME DRINK MIXER —the all-family gift, makes *real* soda-fountain drinks! Youngsters (of *all* ages) have a great time making those rich, thick malteds you eat with a spoon. Re-fresh-es frozen orange juice, improves flavor of mixed drinks. **$22.00,** with recipe book.

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Backed by a company in business over 150 years! All Hamilton Beach mixers are so well made, you get a 5-year guarantee—4 years longer than standard guarantees. This covers all parts and labor, including the motor, except only the cord set, bowls, and damage caused by misuse.

5-year guarantee covers all Hamilton Beach motorized home appliances.

IT'S SIMPLE, SANTA. Hamilton Beach has been making mixers for over 40 years. We've learned to make them better and better.

Our service station records show that it is now safe to increase the ordinary one-year guarantee to a unique-in-the-industry five-year guarantee.

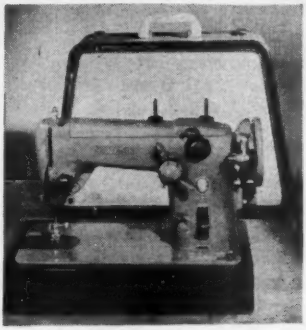
So you see, we're not taking the risk you might think. The history of millions of our products is on our side.

Hamilton Beach products are "confidently" made for folks who like to give a gift with confidence.

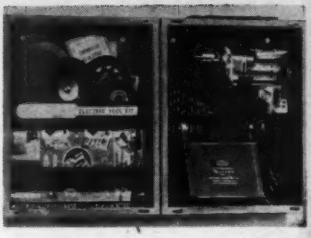
Hamilton Beach Co., Div. of Scovill Mfg. Co., Racine, Wisconsin.

viewing it on a projection screen. So for the movie fan or the 35 mm color photographer may we suggest a 8 or 16 mm movie projector or a 35 mm automatic slide projector. And for the photographer who does his own printing, surprise him with an enlarger.

There are lots of ideas for the gal who loves to sew. New automatic electric sewing machines that will do all types of extra things are available in portable or console models. There are also attachments to make her own machine much more automatic such as the zigzagger and walking presser foot. She'll also enjoy electric scissors which cut through fabrics with ease.



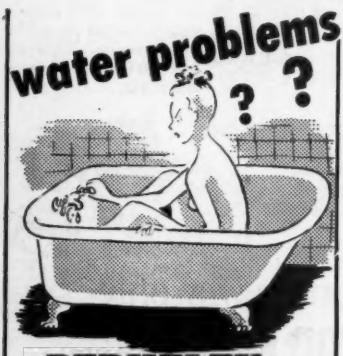
This portable sewing machine is ideal for the daughter away at school or for families with limited living space.



Tools always please a man. This drill kit, which will hang on a wall, contains attachments to do various everyday tasks or hobby operations.

Let's not forget the handyman and his workshop in this do-it-yourself era. These suggestions might also be listed as share-it tools as all members of the family will find uses for them. The electric drill is probably the most popular and most useful of this group. It is handy for all types of jobs around the farm and home. Also included in this grouping are the electric sander and saw.

For Christmas 1956 give an electrical hobby gift and the receiver will have many years of future enjoyment.



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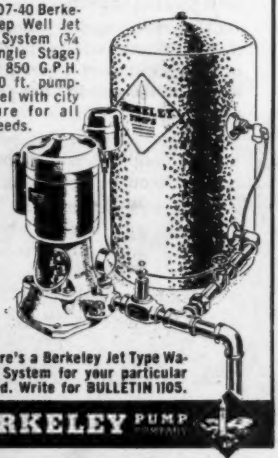

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Enter this Contest

Tell Us Why You are Now Using an Electric Range

Here's an opportunity for you to win some spending money for yourself. And it's so easy, too. All you do is finish the following statement "Why I Switched To Electric Cooking—" Make it a simple letter including the following points—

1. **Cooking equipment previously used**
2. **When you changed to electrical method of cooking**
3. **Factors influencing the change**
4. **Results you have had from cooking with electricity**
5. **How it has helped you**
6. **What it means to your family**

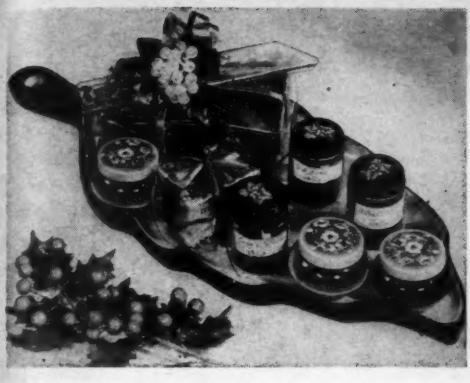
If possible include a picture of yourself using the range. This may be a snapshot showing you preparing food at the range, removing a baked product from the oven, using the broiler, or setting the controls. You do not have to include a picture in order to enter the contest. It is just an added feature.

Twenty-five dollars will be paid to the person writing the letter selected by the judges as telling the best story on "Why I Switched to Electric Cooking". Regular rates will be paid for other letters or portion thereof and pictures printed in the magazine.

Don't miss out on this chance to tell of your experiences with electric cooking. Sit down and write the letter today. It must be postmarked before January 1, 1956. The winner will be announced in the March issue.

Send your entry to: Edna E. Kestel, Homemaking Editor, Electricity on the Farm, 305 East 45th Street, New York 17, N. Y.

XUM



A Tasty Gift of Food

Cookies, Jams, and Cakes Make Excellent Christmas Presents

What could be more appropriate as a special remembrance at Christmas than a gift with a personal touch? And when it is a tasty gift of food you created yourself it takes on a special significance that far outshines any store bought item.

There's fun and satisfaction for the giver in making attractive homemade pleasures that are a symbol of her love and friendliness. And there's also enjoyment for the receiver in consuming the taste tempting morsels.

A glass of colorful jam is an accepted gift at any time. And you don't have to take it from your own depleted supply. Simply make it from your frozen sweetened fruit. You'll have several jars for giving and some for the family to enjoy.

Frozen Fruit Jam

Use one quart of home frozen fruit packed with sugar or syrup. If the fruit has been frozen without sweetening make jam according to the method used for fresh fruits. Thaw and crush or chop it. Then measure all fruit and juice into a large saucepan. From the following table select the amount of sugar and powdered pectin needed according to the type and amount of fruit you are using. Measure the sugar and set it aside. Add powdered pectin and lemon juice (if required) to fruit and juice in saucepan. Mix well. Place over high heat. Stir until mixture comes to a hard boil. At once stir in sugar and bring to a full rolling boil and boil hard 1 minute. Remove from heat and skim off foam with a metal spoon. Then stir and skim by turns for five minutes to cool slightly and prevent floating fruit. Ladle into glasses and cover at once with ⅛ inch hot paraffin.

It wouldn't be Christmas without Christmas cookies. Here are some recipes for you to try.

Walnut Pyramid Cookies

½ cup butter
½ cup light brown sugar
1 egg
½ teaspoon maple flavoring
1 teaspoon vanilla
1¼ cups sifted all purpose flour
¼ teaspoon baking powder
¼ teaspoon salt

Cream butter and add sugar gradually, creaming well. Add egg and beat well. Add flavorings. Blend in the sifted dry ingredients and knead gently until the dough is smooth. Chill dough. Roll a small portion at a time on a floured canvas or board to about ⅛ inch thickness. Cut dough using a 2 inch, 1½ inch, and 1 inch cutter to have three different sizes. Place on greased cookie sheet and bake at 375°F. 8 to 10 minutes. Remove at once. When cool, spread the bottom of the middle sized cookie with Walnut Filling and place on top largest cookie. Do the same with the small cookie and place on top

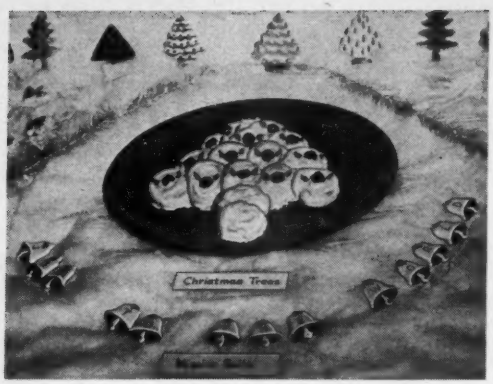
Walnut Pyramid Cookies

Strawberry or Blackberry Jam

Thawed berries and juice	3 cups	3½ cups	4 cups	4½ cups
Sugar	3 cups	3½ cups	3½ cups	4 cups
Powdered Pectin	½ box	½ box	1 box	1 box
Yield—medium glasses	6	7	7-8	8-9

Peach Jam

Thawed peaches and juice	3 cups	3½ cups	4 cups	4½ cups
Sugar	2¾ cups	3 cups	3½ cups	4 cups
Lemon juice	1 tablespoon	1 tablespoon	1 tablespoon	1 tablespoon
Powdered pectin	½ box	½ box	1 box	1 box
Yield—medium glasses	5	6	7	8



Christmas Tree Cookies

Swedish Ginger Cookies

the middle cookie; thus making a pyramid of three cookies. Top with a small amount of filling and decorate with candied cherry or citron.

Walnut Filling

1 cup walnuts
½ cup light brown sugar
2 tablespoons hot water
2 tablespoons butter
1 egg yolk
2 teaspoons vanilla

Place walnuts in a shallow pan and toast in oven at 325°F. about 10 minutes. Grate the nuts. Combine brown sugar, hot water, butter, and egg yolk in a small sauce pan. Cook at low heat until the mixture thickens. Add vanilla and grated walnuts. Spread between cookies as given above. Makes about 36 three-layer pyramids.

Christmas Tree Cookies (Yeast Dough)

Basic Dough
1 cup milk
¼ cup butter
½ cup sugar
2 teaspoons salt
2 yeast cakes (1 ounce)
¼ cup lukewarm water
1 teaspoon grated lemon rind
2 cups all purpose flour
2 eggs, well beaten
About 2¾ cups all purpose flour
Softened butter

Scald milk; add butter, sugar, and salt and cool to lukewarm. Soften yeast in lukewarm water and add to milk mixture. Add lemon rind and 2 cups flour to yeast mixture and beat until smooth. Add eggs and beat thoroughly. Add remaining flour to make a soft dough. Turn out on floured board and knead until smooth and satiny. Place in lightly greased bowl and brush top with melted shortening. Cover. Let rise in warm place until doubled in bulk—about 1½ hours. Divide into four parts. Use ¼ recipe for each tree.

For Each Tree

Roll out one portion of dough into a rectangle 5x13x¼ inches. Brush with softened butter and sprinkle with a mixture of ⅓ cup sugar and 1 teaspoon cinnamon. Roll as for a jelly roll and cut in 17 slices. On a greased cookie sheet, use the tip of your finger to trace a triangular outline of a tree 8 inches tall and 6 inches wide at the base. Arrange rolls with cut side down in form of the tree starting with one roll at the top. Just below place two overlapping slightly; then a row of three, four, and finally five. Use the two end slices for the trunk. Cover and let rise until doubled in bulk—about 45 minutes. Bake 350°F. for 20 to 25 minutes. Frost with powdered sugar frosting and decorate with candied cherries and citron.

Swedish Ginger Cookies

½ cup dark corn syrup
½ cup sugar
½ cup butter, melted
6 tablespoons cream
½ teaspoon ginger
½ teaspoon cloves
½ teaspoon cinnamon
½ teaspoon soda
2 tablespoons cream
3 cups all purpose flour

Boil syrup one minute and cool slightly. Add sugar, melted butter, cream, and spices. Dissolve soda in the 2 tablespoons cream and add with flour. Refrigerate overnight. Roll on floured canvas or board to ⅛ inch thickness and cut in desired shapes. Decorate before or after baking as desired. Place on greased cookie sheets and bake 350°F. for about 10 to 15 minutes depending on size and thickness of cookie. Makes 4 to 5 dozen.

Christmas breads are a part of the day's traditional foods.

Clean Light Fixtures

Don't wait till the bulb burns out to take down that ceiling globe and wash it. You'll be amazed at the amount of grime light shields or globes can collect, both inside and outside, in a short time. To get the maximum light, take them down and suds them every two weeks.

Every light bulb needs to be kept clean, of course. But never dunk it in the suds because the base is cemented onto the glass and you don't want the works to come apart! Just unscrew the bulb from the socket, wipe it with a soapy cloth, then with a rinse cloth, and dry thoroughly.

It's old-fashioned to insist that clothes stay whiter or "smell sweeter" when dried out-of doors. It isn't sunshine that whitens clothes; it's thorough rinsing. And most modern dryers have ozone lamps inside to make sure your clothes will smell sweet.

Dresses for Every Occasion

2278 Daytime flattery for the shorter, taller figure. You'll find it easy-to-sew, flattering the year 'round . . . . good looking enough to meet the postman, market in. Sizes 12½ to 24½. Size 16½: 4½ yds. 35-in.

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Add FIVE CENTS for EACH pattern for first class mailing.

For FALL-WINTER FASHION BOOK, add TWENTY-FIVE CENTS.

How to Clean Stained Linens

Holiday time leaves its mark on table linen. There are few holiday meals that do not end with some type of stain clinging to the tablecloth or napkins. If these stains are treated promptly and effectively they will leave no telltale marks.

Gravy stains are a common occurrence. Since gravy is a combination of protein and fat it is necessary to soak the stain in cool water to avoid setting the protein. The grease can then be removed by washing in hot sudsy water. Careful rubbing by hand during this process will help.

Cranberry and fruit stains are best removed by pouring boiling water over them. Place the stained portion over a bowl and pour the boiling water from a height of 2 feet. The force of the water drives out the stain. Soap will set the stain, so avoid its use until after removing the stain.

Candles that decorate your table often also decorate the cloth. First scrape the wax with a dull knife. Then place between blotters or paper towels and press with a warm iron. Move the blotters as they take up the wax. A grease solvent or carbon tetrachloride can be sponged on stain to remove the excess wax. To remove any remaining color from the wax, sponge with a mixture of one-third denatured alcohol to two-thirds water.

Some lipsticks still like to leave their telltale mark on napkins. This may be removed by working glycerine or petroleum jelly into stain. Then launder in soapy water.

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- Fully guaranteed

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1 gal. size

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CUT FEED COSTS 20%

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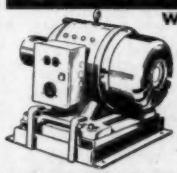

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Welding—An Expert Tells How

Choose Right Equipment, Observe Safety Rules, Utilize Correct Techniques, and Practice!

Working on his father's dairy farm near Cambridge, N. Y., and branching out with a 6,000-bird turkey flock of his own, Walter Dunbar learned to do his own blacksmith work the modern manner—by welding. Dunbar says, "Doing your own welding means you can build or repair something when and how you want it. When you learn how to do it properly, electric welding is no harder than doing your own carpenter work."

Dunbar got so good at it that he set up his own village welding shop in 1940 and specializes as a Mr. Fixit for other farmers, as well as doing expert work for factories, construction outfits and so forth. As a result of this, he speaks from lots of real experience when he "talks shop" about tricks of the trade. For example, he always has a bottle of milk handy. He calls milk the simplest antidote for those poisonous fumes given off when heating galvanized steel. The milk counteracts poisonous zinc, and also reduces throat irritation.

Proper Equipment Important

And he swears by arc electrodes of the modern shielded type for the beginner as well as professional. Thanks to this type, he points out, arc welding has largely replaced riveting in big construction. While depositing its weld metal, this electrode surrounds the arc area with a protective envelope of inert gas to keep away air and prevent brittleness.

For ordinary farm welding, a 180 ampere, alternating current type unit is recommended. This unit will not draw more than 37½ amperes from the line side. It operates on a 230 volt circuit. It should conform to National Electrical Manufacturers' Association [NEMA] standards and

Dunbar is the "Village Blacksmith" to many people around his community. Here he is repairing broken wheel studs on a farmer's truck.

should be listed by Underwriters' Laboratories. Transformer welders or "buzz boxes" are available in 40 to 50 ampere sizes for use on 115 volt circuits. They are intended for hobby purposes rather than for heavy repair jobs.

There are many kinds of metals in the welders dictionary. There are also a number of electrodes to choose from. The American Welding Society (A.W.S.) has established an electrode classification which is printed on the carton, usually under the manufacturer's trade name and number. An analysis of the meaning of this number is useful. For example, an A.W.S.-E. 6013 electrode means:

A.W.S.—American Welding Society

"E"—Signifies that electrodes is of the metal arc type

First two digits (60)—Indicates minimum allowable tensile strength of the deposited weld metal in thousands of pounds per square inch.

Third digit (1)—Refers to position of the weld.

1—Suitable for flat, vertical, and overhead positions.

2—Suitable for flat and vertical positions.

3—Suitable only for flat position.

Fourth digit (3)—A rating which considers such characteristics as penetration, type of arc, smoothness of deposit, and carbon content.

Selection of Electrode Types

Mild steels, cast iron, high carbon steel, and hard surfacing applications are the types of material most often encountered in farm welding. Only a limited number of electrode types are necessary to handle these materials. The following types are recommended:

(1) Mild Steel for the majority of farm jobs;

(2) Machinable Cast for cast iron;

(3) High Carbon Steel for high carbon materials such as car bumpers, spring leaves, and teeth of spring tooth harrows (best results when used with D. C. welders);

(4) Hard surfacing for building up protective coatings on metals that must resist wear such as plow shares.

Metal edges must be smooth and clean of any oxidized metal before actual welding is done. An electric emery wheel or grinder is a must for anyone who plans to do a good job of welding.

In working with metal, aim to form a single, solid, homogenous mass after cooling. Some metals demand an expert's touch or a lot of beginner's patience. Dunbar cautions that high-carbon tool steels easily become brittle, and nickel-chromium "white metals" may be burned to a crisp.

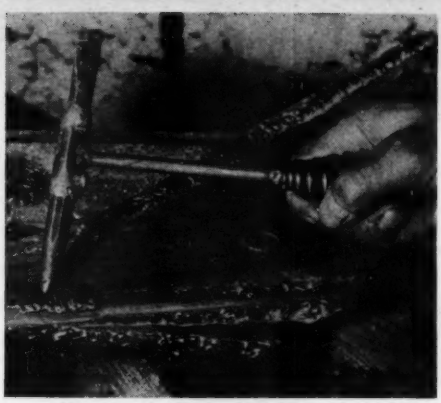
For proper metal fusion in welding, Dunbar suggests a medium between too much and too little heat. Results of too little are easily recognized—gobs of weld metal about as trustworthy as chewing gum. There wasn't enough heat penetration. Excess heat produces weak joints in several ways. The trouble is usually excessive brittleness caused by oxidation or too rapid cooling.

The beginner should avoid metals requiring touchy preheating or delayed cooling. Start off with mild or medium steels and choose electrodes recommended

Here, Dunbar demonstrates a "weave" bead to hard-face a plow point. He always wears gloves and a welding helmet for protection against hot spattering metal or arc ray burns. By keeping one hand on helmet window, he can snap it shut just before striking the arc.

by manufacturers for specific metals. And do lots of practicing.

When Dunbar gets a new apprentice, he has him start with the simplest exercise of all—running a straight bead on a flat plate of mild steel. This teaches proper penetration without "undercutting"—weakening gouges caused by excess or misplaced heat that melts base metal away. The bead should have uniform height and width, sufficient penetration, regularity of ripples, and no overlapping, undercutting or signs of porosity.



Another "must" for a good welding job is the chipping hammer. It knocks off the top layer of slag which must be removed before painting.

The next step for the beginner is the "weave" bead. It is the easiest way to cover a wide area in a short time and is made with short, straight passes back and forth as you move along.

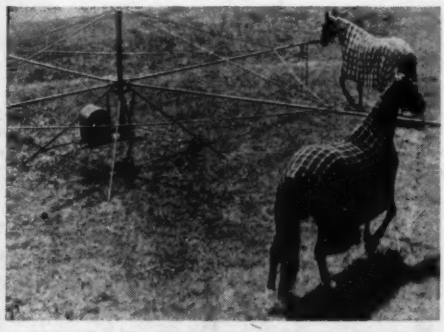
"And remember the hot welded metal is hungry for oxygen," Dunbar advises. "It'll start rusting fast—so paint the finished job soon as possible." But before that, be sure to use a chipping hammer, or ordinary cold chisel, to knock off the top layer of slag. This is especially necessary if a new layer of weld metal is to be added and have it fuse properly.

Striking the arc should be easy as striking a match. Dunbar does it with a wiping motion. He finds a common beginner's fault is to point the electrode at the work metal, lower his helmet, then feel around. This often results in sticking (freezing) the electrode to the work metal. That, of course, means that instead of an arc, you have a direct short.

Along with this, Dunbar advises learning how to be ambidextrous as far as welding is concerned. Not just because of awkward spots you may get into, but because there's too much muscle used by your favorite arm. If you're a right-hander, you'll find that the left arm will give the delicate touch needed for finer jobs.

Common-sense safety rules should always be followed. Coveralls may be soiled, but never with gas, oil or grease and they should not be damp or wet. Leather gauntlet type gloves should always be worn. The helmet, of course, is a must. Don't try substituting ordinary goggles. They don't protect face and neck against hot spatter, and aren't fitted with the filter lens that screens out dangerous arc rays. Although there may be no permanent eye injury from exposure to the arc's light, the feeling of hot sandpaper rubbing your eyeballs can torture you severely.

The rest is practice, and counting your welded beads as they improve until you know the kind of satisfaction Dunbar feels when he flips his helmet, scans the welded joint and comments, "I guess she'll hold." After that, you will find yourself not only repairing the "broken bones" of your equipment, but going on to build handy things of your own. For example, while he was turkey farming, Dunbar rigged up such things as an oscillating incubator, and a double-triggered electric pistol that shocked and bled his Thanksgiving birds.



Dunbar built this race horse "exerciser" in his spare moments. It uses a discarded automobile differential and a gear box speed reduction unit for speed reduction from the ⅓ hp electric motor power unit.

4-H Electric Program Marks 20th Anniversary

The three national winners of the 4-H Electric Awards Program in 1936, just after receiving their awards. From left to right: Turner G. Timberlake, Paul H. Shaff, and Don Mosher.

Three men who received scholarships twenty years ago in the first 4-H Electric Awards Program were guests of honor at the 20th Anniversary Electric Program dinner held in Chicago on November 29. At this dinner six more boys and girls were awarded college scholarships in recognition of outstanding achievements in the 4-H Electric Program. This makes a total of 111 scholarships awarded since the program was started.

In 1936, the Extension Services in several of the state agriculture colleges recognized the important effect that application of electric power would have on future farming. As a result, the 4-H Electric Program was initiated. Since then more than 700,000 boys and girls have been active in the program. The program is an Extension Service educational program designed to help boys and girls enrolled in 4-H Clubs learn more about electrical equipment and how to use and take care of it in the home and on the farm.

To recognize outstanding achievement by these members, the Westinghouse Educational Foundation provides four gold medals to be awarded to county winners in each county in the United States, a trip to the 4-H Club Congress in Chicago for state winners, and six $300 college scholarships for national winners.

The three boys who won scholarships in 1936 were Don Mosher, from Illinois; Paul Shaff, from Iowa; and Turner Timberlake, from Maryland. Mosher and Shaff are now successful farmers. Timberlake is a successful engineer.

Don Mosher is now a purebred Hampshire hog raiser on his farm near DeKalb, Illinois.

Mosher raises purebred Hampshire hogs—on an electrified farm. He used his scholarship to attend the University of Illinois and then obtained a Masters Degree in Business Administration from Harvard Graduate School of Business Administration.

Shaff is operating a 240 acre farm in partnership with his father. Principal crops on the Shaff farm are corn, oats, soybeans and alfalfa. They raise 400 hogs a year and milk 20 Jersey cows. A herd of Herefords provides calves to feed out for market. Shaff used his scholarship at Iowa State.

Turner Timberlake is now

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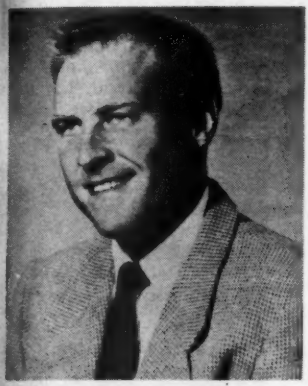
Chief Engineer, Maintenance Technical Office, U.S. Army Crops of Engineers, Granite City Engineer Depot, Illinois. While on active duty with the Army, Timberlake was awarded the Legion of Merit for outstanding engineering services performed. He was separated from the Army with the rank of Major. He used his scholarship at the University of Maryland to obtain a degree in mechanical engineering.



Paul H. Shaff operates a 240-acre farm at Camanche, Iowa.

Here is what some of the other past scholarship winners are doing:

Dr. Allen Parker, a 1938 winner, is teaching Psychology at the University of Portland. Hugh Murray, a 1940 winner, is a mechanical-electrical engineer with Fisher Bodies. Mrs. Gladys McClung Skidmore, 1941, is head home economist with Connecticut Electric Sales. Charles Severance, also 1941, is extension Agricultural Engineer in Louisiana.

The Radio Farm Director for radio station in Greeley, Colorado, is 1943 winner, Lawrence Kirk. A 1945 scholarship winner, Charles Peal, is assistant county agricultural agent with the Agricultural Extension Service in Tennessee. Rhonwyn Lowery, 1947, is assistant State 4-H Club Leader in Georgia. James Sutherland, 1948, is a graduate engineer and was on the Westinghouse student training program until he left for Army duty last June.

Turner G. Timberlake is an Army Major with the Corps of Engineers.

Eleven of the 4-H Electric Program scholarship winners are engineers, five are studying engineering, twenty are farming, and nine are in agricultural education. Others are school teachers, soil conservation specialists, scientists, doctors, lawyers, nurses, veterinarians, home economists, and many of the girls are homemakers.

"I doubt if it will replace the snow shovel."

A practice that helps save lambs is drying off the newborn lambs with heat lamps during cold weather.

Some Dairymen are solving the problem of having their cows eat their ground feed ration during the short combined milker interval by adding water to wet the mix. Cows relish the dampened mix and eat it much more rapidly than in the dry state.

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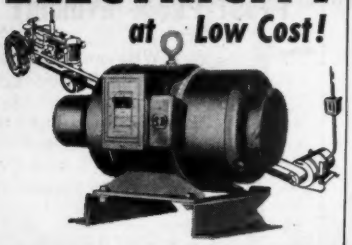

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Heating Cable Prevents Frozen Water Pipes

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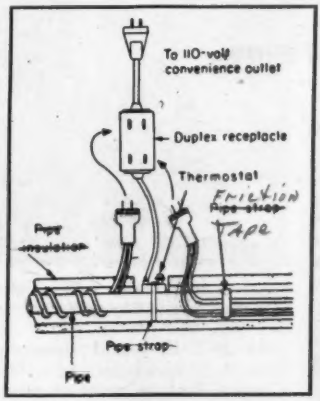

The heating cable may be spiralled around pipe as shown at left or run parallel with pipe as shown at right. In either event it should be fastened securely so as to remain in place and covered with an asbestos type pipe insulation. Caution should be taken to avoid overlapping cable or having it in contact with itself. Fasten the thermostat sensing element directly onto the water pipe.

The heating cable should be run parallel to the pipe and fastened to it with ordinary pipe straps or friction tape. It may also be spiralled around the pipe. Best results are obtained if the pipe is then insulated with sponge felted asbestos pipe covering or its equivalent. The insulation affords protection against mechanical injury and saves heat.

A thermostat should be used in order that heat will be on only when needed and power will not be wasted. The thermostat sensing element should be in direct contact with the pipe itself. It can be fastened to the pipe in the same manner as the cable. Set adjustable thermostats at about 40°F.

Arnold Davis of Presque Isle, Maine uses a 120 ft. length of soil heating cable taped to his water pipe in the poultry house to avoid frozen pipes. Both cable and pipe are covered with asbestos insulation in order to conserve heat. He connects the cable to a 230 volt circuit. Cable sizes for 115 volts are also available.

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Questions and Answers

Hot Cord Plugs

▶**Question:** *Several times lately I have noticed that when unplugging one of my extension cords, the plug has become very hot. What causes this?*

N. V. M., Michigan

▶**Answer:** Generally, this is due to poor contact between the prongs of the plug and the outlet receptacle. If the receptacle is old, the spring may be gone from the contacts within it. If a tight fit is not made with the prongs of the plug, arcing takes place. This is what produces the heat in the plug. Have both the socket and the cord plug checked to make sure they are in good condition.

Shortening Heating Cable

▶**Question:** *I have a 60 ft. length of lead sheathed heating cable. The cable has broken into two lengths, each 30 ft. long. Will it work satisfactorily to make two 30 ft. cables from these pieces?*

J.I.W., Ohio

▶**Answer:** The answer is NO to your question! The resistance wire in this heating cable is designed such that a 60 ft. length will operate properly on a 115 volt circuit. The use of shorter lengths than that for which the cable is designed will increase the operating temperature and cause the cable to overheat. In your particular case, cutting the cable length in half might quite possibly increase the temperature to the extent that it would seriously harm or melt the lead sheathing.

Cow Trainers

▶**Question:** *I have a dairy barn in which the stalls are too long for the small sized breed of cows I am now using. Will an electric cow trainer work satisfactorily to keep the cows clean under these conditions?*

W.A.F., Minnesota

▶**Answer:** Yes, when electric cow trainers are used, they can be adjusted so that animals stay clean. As a matter of fact, University of Wisconsin agricultural engineers are now recommending a minimum stall length of 5 ft. 10 in. Also, they suggest all stalls may now be the same length—a size that fits the larger animals. The cow trainers are then adjusted to fit the size of the cow. Wisconsin engineers point out that long stalls reduce leg and udder injuries and help to cut down on mastitis. A savings of bedding is also realized since the cow doesn't step back into the gutter as often and pull part of the bedding down as she steps back.

Lighting Terms

▶**Question:** *What is the difference between candle power and foot-candle?*

O.K.J. Idaho

▶**Answer:** The candle is the unit of illuminating intensity. In the U.S., standards for this unit are set up by the Bureau of Standards. Candle power is the illuminating intensity of a light source in definite directions. Although the candle has long been replaced by more accurate standards, it still probably offers the best illustration of one candle power source.

With the exception of a few types of light sources, the lumen has replaced candle power as a unit of light quantity. The lumen measures the total light output in all directions from a lamp bulb or light source.

The foot-candle is a quantitative unit for measuring the amount of light falling on a surface. A foot-candle is the amount

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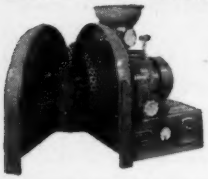

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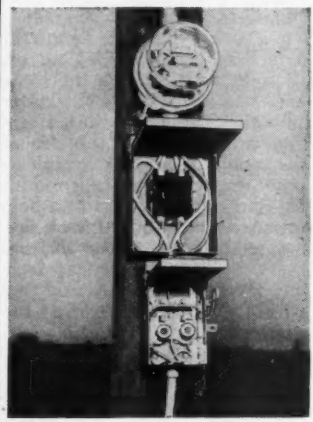
of illumination at a point on a plane one foot distant from a light source of one candle power and perpendicular to the light rays at this point. A working idea of one foot-candle may be obtained by observing the illumination at a point on a surface one foot from a candle and perpendicular to the light rays at that point. Foot-candles themselves cannot be seen, but the amount of light can be measured with an instrument called a light meter.

The foot-candle is commonly used to rate a lighting installation as to the amount of light that actually falls on a working surface.



Separate Switch for Water Pump

Most farmers must supply their own fire protection. The first rule to be followed in case of fire is to turn off the main disconnect switch for the farm electric service. Unless special provision is made, this also turns off the water pump. Many farmers have had their pump motors wired in ahead of the main disconnect switch on their meter pole as shown above. This arrangement allows them to shut off the main disconnect switch and still operate their pump to fight the fire. The installation is very easily made and the one shown here on the Chester Hanna farm, Mount Pleasant, Iowa, cost only $15.

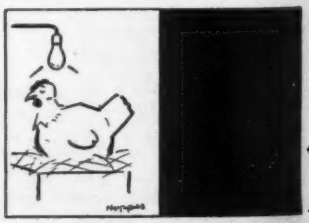
Sheep Barn Ventilation

A well aired building is necessary for sheep. This shows a method used by Kenneth Wag-

ner of West Liberty, Iowa. A plywood panel with an electrical exhaust fan mounted in the center replaces one of the barn window sashes. It helps keep straw bedding dry, takes out dead or stale air in severe weather, and is healthier for the sheep.

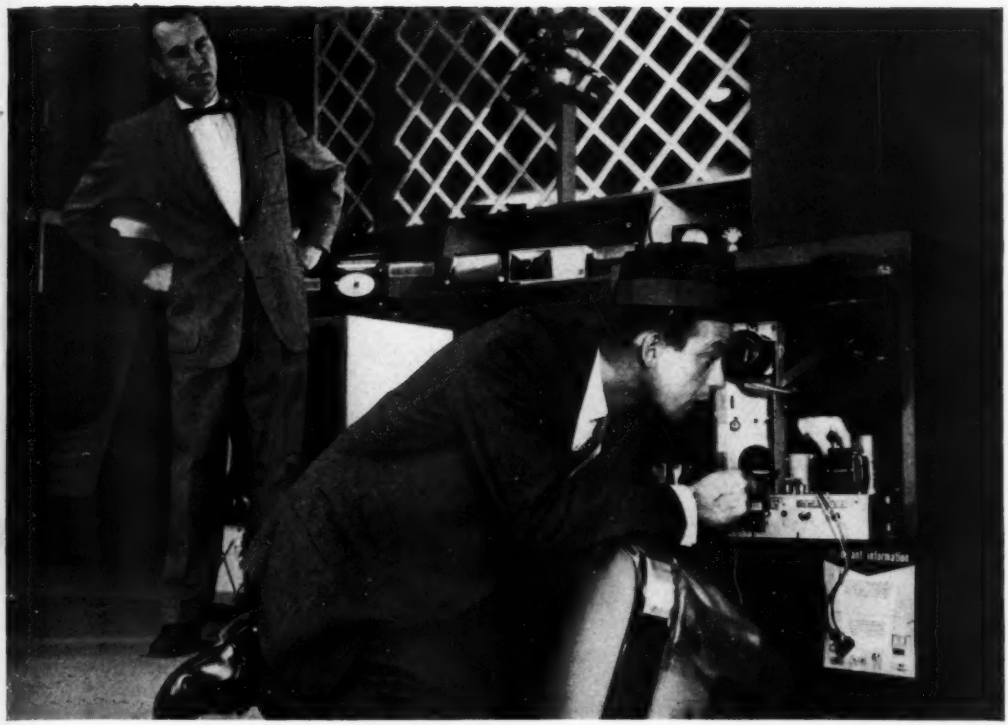
Heated Water Boosts Gains

Cooperative studies by the U.S. Department of Agriculture and Iowa State College show that hogs make faster, more economical gains if they have plenty of fresh water available during freezing weather. During one test, hogs drinking from thermostatically controlled waterers gained an average of 10 pounds more per animal in 6 weeks of freezing temperatures than pigs that had unheated drinking troughs filled by hand.



"Darn it! I wasn't finished yet!"

XUM



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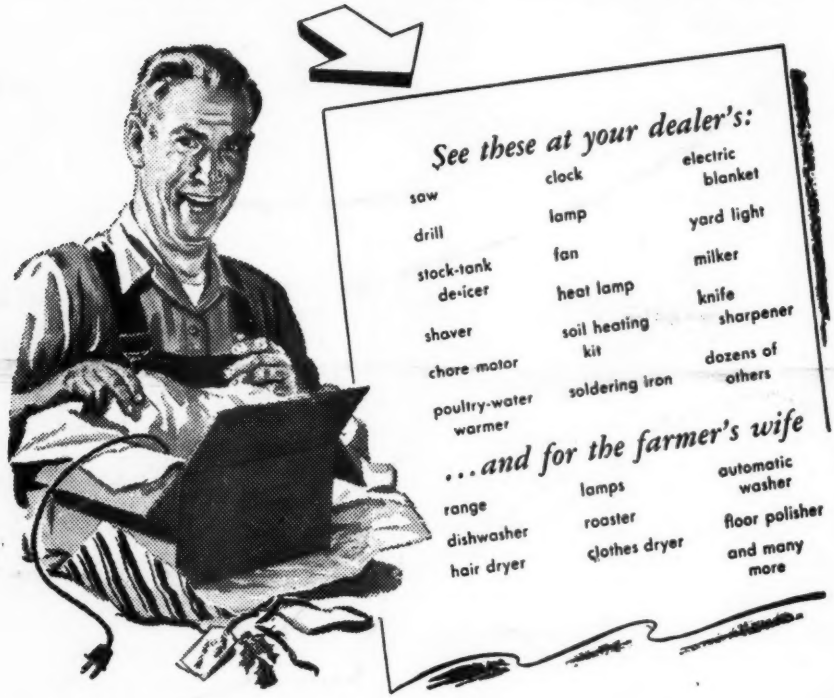
You can always please a farmer with Electrical Christmas Gifts



Farmers like gifts that make farm chores easier. They like gifts that bring personal comfort and leisure-time fun. In either class, there are scores of electrical gifts that are sure to please . . . whether you have a couple of dollars to spend or a couple hundred.

The gifts suggested here are just a starter. For a farmer with a special hobby—be it woodworking, music, or tropical fish—there are dozens more that will give him a special thrill. ★ For value, for variety, make your appliance dealer's store your gift-shopping headquarters.

We are sending you this magazine so that you may know the many advantages your electric service provides.

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